

T@W Good Practice Form

Setting

Title:	Serpa Solar Power Plant
Country:	Portugal
Location:	Serpa
Start date:	June 2006
End date:	January 2007
Technology keyword(s):	Solar Power
Host sector:	Electricity Production

General description

Summary:

Portugal is an attractive location for solar power due to its sunny location that provides an optimal environment for high levels of solar energy production and also due to the new Portuguese energy policy framework, one of the most advanced renewable energy policies of the world, that was planned keeping in mind the security of energy supply and the promotion of the use of renewable energies. It is important to mention that one relevant key of this policy framework is a feed-in tariff for both ground-mounted and roof-mounted solar power systems, with 15 year power purchase guaranteed. The Portuguese government has guaranteed, for 15 years, a higher price (€ .31) than the market price (€ .09) for each kWh of solar energy produced.

The Serpa Solar Power Plant, situated at 200 km southeast of Lisbon, is the first large photovoltaic installation of Portugal and one of the largest projects in the world. The 11 MW project covers a total of 60 hectares and uses 52,300 solar panels. The electricity produced is sold to the national grid which is then used to fulfil the electricity needs of 8000 homes. This is a joint project of GE Energy Financial Services, PowerLight Corporation and Catavento (a Portuguese renewable energy company). GE Energy Financial Services financed and owns the facility. PowerLight designed the plant using its Power Tracker system, and is operating and maintaining it. Catavento developed the project and is providing management services.

Aims:

With this project the developers aim to produce electricity using solar energy - a renewable energy source, contributing for the Portuguese goals regarding electricity production and national security of supply, reducing the dependency of fossil fuels.

Summary of Results:

Covering a total of 60 ha and using about 52,300 panels, the solar plant has 11 MW of installed power.

Technical details

Technical details:

The Serpa Solar Power Plant is a ground-mounted photovoltaic system that uses silicon solar cells to convert the solar energy directly into electricity. The 11 MW project uses PowerLight's Power Tracker Technology that follows the sun as it moves across the sky throughout the day. The panels rotate to the sun at 45 degrees interval - in the morning they rotate east 45 degrees, while, in the afternoon the rotation is west 45 degrees.

The system uses "SPR-205", "SPR-210", and "SPR-220" modules manufactured by SunPower, "STP 260" and "STP 270" modules manufactured by Suntech, "ND-6AE3DD" modules manufactured by Sharp, "HIP-190" and "HIP-195" modules manufactured by Sanyo, "Sinvert" 400 kVA inverters manufactured by Siemens, and a one axis tracking mechanism designed by PowerLight. The sketch displays a standard block of the east-to-west tracking system.

With this system it is possible to produce 18% more electricity than using conventional fixed-mount solar panel systems.

Energy data

Energy data:

This solar energy plant can produce about 21 GWh per year. The electricity generated is supplied to the national grid which is then used to provide the electricity needs of 8,000 homes.

Energy saved/generated: 21 GWh/year
 Monitoring: Catavento using WinCC software from Siemens

Environmental data

Environmental data:

The photovoltaic panels allow the production of electricity without emitting any greenhouse gases. In this case, the electricity produced is able to power 8,000 homes, avoiding the emissions of about 30,000 tonCO₂ per year.

Project GHG-emissions: ton CO₂/year
 GHG-emission reductions: 30,000 ton CO₂/year

Economic data:

Financing: GE Energy Financial Services (public, commercial, etc)
 Project cost: 61,8 M€

Additional Information

Project Web site: <http://www.geenergyfinancialservices.com/SerpaSolarPlant/>

Photo Library



Contact information:

Technology keyword(s) specific to this organisation: Chemical

Organisation / Agency: CATAVENTO, SA

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